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OU1 draft design narrative and drawings

Mike Cirian to: barbdesch, Bill Bischoff, xcav8orr, dproll, Peggy Williams, robinsdesk, vicky lawrence, glena.young

09/14/2010 04:55 PM

Cc: Victor Ketellapper, Mike Cirian, rsloan, Rebecca Thomas

This message is digitally signed.

History: This message has been forwarded.

Dear Mayor and City Council members,

Rebecca asked that I send the attached pdf files of the draft design narrative and two drawings for OU1. This includes a draft Narrative and the two options for remedial activities . We are currently working on the cost proposals you requested and we will share those with you once we have them complete.

Thanks,
Mike Cirian, PE
US EPA
Remedial Project Manager
406-293-6194

OU1_DESIGN_ANALYSIS_draft for discussion_091410.pdf OU1-OPTION 1.pdf OU1-OPTION 2.pdf

DRAFT- FOR DISCUSSION
OU1 EXPORT PLANT DESIGN ANALYSIS
LIBBY ASBESTOS SUPERFUND SITE
LIBBY, MONTANA
SEPTEMBER 14, 2010

Site Name and Location

The Libby Asbestos Superfund Site is located in and around the Town of Libby, Montana. Libby is the county seat of Lincoln County and is in the northwest corner of Montana, about 35 miles east of Idaho and 65 miles south of Canada. Operable Unit 1 (OU1), also known as the former Export Plant, is one of eight OUs at the site and is located in town at the intersection of Highway 37 and the Kootenai River.

OU1 Overview

The former Export Plant is situated on the south side of the Kootenai River, just north of the downtown area of the City of Libby, Montana. OU1 includes the embankments of Montana Highway 37 and City Service Road, the former Export Plant, and Riverside Park. The property is bounded by the Kootenai River on the north, Highway 37 on the east, the BNSF railroad thoroughfare on the south, and State of Montana property on the west.

From the early 1960s to approximately 1990, the Export Plant was used by the W.R. Grace Company for stockpiling and distributing vermiculite concentrate to Grace expansion plants and customers throughout the United States. Ownership was transferred to the City of Libby in the mid-1990s. Throughout its history, portions of the site were leased to various parties for both commercial and non-commercial enterprises. The infrastructure that supported these businesses included industrial power supply, a railroad spur, and truck scales. This infrastructure was removed during the removal activities conducted at this site.

City of Libby Involvement in the Design of the Remedy for OU1

Section 12.1 of the Record of Decision states that "EPA will work closely with the City of Libby during design so that the remedy can complement any planned future uses." Anticipated development of the area by the City applies primarily to Area 1 (Former Export Plant), where the city plans to expand Riverside Park. Two options for the majority of Area 1 have been developed to continue the discussion between EPA and the City of Libby. Both options apply a remedy consistent with the Record of Decision.

There are areas of known contamination that will be remediated regardless of which option is pursued for Area 1. These areas and their remedy are considered static, and are outlined here without options. They are detailed in the section "Implementation of the OU1 Remedial Action." These areas are as follows:

1. The slopes of Highway 37 and City Service Road and the contaminated area at the base of these slopes
2. The boat ramp and the banks of the Kootenai River along Riverside Park
3. Contamination on the ground near the pumphouse on the east end of Riverside Park
4. A strip of ground adjacent to City Service Road
5. The area around the Search and Rescue building
6. Areas within Area 1 where high levels of vermiculite were observed will be excavated to at least 18”
7. The City Service Road spur
8. The areas within the boundaries of the current Riverside Park (Area 2) where visible vermiculite was observed

Former Export Plant (Area 1)

Area 1 is approximately 12 acres in size. It is currently owned by the City of Libby and is undeveloped, with the exception of a small area used by David Thompson Search and Rescue. In 2004, the search and rescue organization constructed a building containing an office and a five-bay garage on the northwest portion of the site on the south side of City Service Road. The garage is used for storing search and rescue equipment and vehicles. Several other agencies, including local and state law enforcement, also hold meetings in the main office. Since this is the area of OU1 with the most identified contamination, access to much of Area 1 has been restricted by construction fencing. EPA has provided guidance to the city regarding the use of caution when conducting any activities at the site that disturb soil. Portions of Area 1 are used for Riverside Park event parking.

Riverside Park (Area 2)

Area 2, Riverside Park, is approximately 4.7 acres in size. It is also currently owned by the City of Libby and serves a variety of recreational visitors. The main features of the park include two boat ramps, two pavilions, picnic tables, and a pumphouse. The newer of the two boat ramps is used by recreational boaters and commercial fishing outfitters; the older ramp is not commonly used due to swift current at its approach. The pumphouse is used to draw non-potable water from the Kootenai River. The pump was installed jointly by the City of Libby and Lincoln County in 1999 to provide a backup water source to local fire departments. The pumphouse is accessed by city personnel in order to perform maintenance on the pump. The pump is connected to an external water spigot, which is used by the city to draw water for street sweeping and other maintenance operations, and other workers (such as employees of local contractors and contractors working on EPA’s removal program) to draw water primarily for use in dust suppression equipment. Access to Area 2 is unrestricted.

Embankments (Area 3)

Area 3 is less than 1 acre in size. It is owned and maintained by the Montana Department of Transportation (MDT). MDT currently performs only periodic maintenance of these embankments as needed. The types of maintenance activities conducted by MDT include

application of herbicides, replacement of guardrails and guardrail posts, and replacement and maintenance of roadside light posts. Access to these areas is unrestricted.

Source Materials

Vermiculite and/or vermiculite concentrate was transported to OU1 from the mine for stockpiling and staging prior to distribution. It is also believed that vermiculite materials were used to fill in low lying areas of the site. Surface soil within the OU1 boundary contains visible vermiculite and also LA at ND, trace, or <1% levels. Subsurface soil is known to contain vermiculite, the exact location and depths of vermiculite containing soil are not fully documented or delineated.

Previous Removal Actions

OU1 has undergone a number of phases of investigations and removal actions. The principal removal actions carried out at the site are summarized below:

Removal Event – July 2000 through January 2001

EPA issued a Unilateral Administrative Order (UAO) to Grace on May 23, 2000, based on the finding of Libby amphibole asbestos (LA) at levels of concern in air and site soil. The UAO required that Grace temporarily relocate the onsite business (Millwork West), clean five onsite historic buildings and the building's contents, excavate and dispose of vermiculite and LA-contaminated soil and debris, and restore the property. The structures were ultimately demolished because they were in poor condition, did not meet current building code requirements, and could not be decontaminated. In exchange for the value of the buildings, and at no cost the City, Grace built a water main to the property that meets all code requirements. Grace also temporarily relocated Mill Work West, which decided not to move back to the property. EPA provided oversight to ensure compliance. Contaminated materials were disposed of at the former mine. During soil excavation, confirmation sampling was conducted by Grace. The 63 samples were analyzed and the results ranged from ND to 2% LA. Grace was directed to remove soil in additional 4- to 6-inch increments until EPA clearance criteria (<1% LA at depth) was met. The excavation was backfilled with EPA-approved fill, and the final 6-inch layer was either gravel or topsoil, depending upon original surface conditions.

Removal Event – September/October 2001

EPA required Grace to conduct a cleanup to address residual LA contamination in site buildings and soil. All buildings except the planar shop were demolished and soil was excavated. Contaminated soil and debris was disposed at the former vermiculite mine. A composite dust sample was collected from the surface of lumber that had been decontaminated and moved outside the exclusion zone and was ND for LA. A dust sample was collected from the surface of a lumber pile inside the exclusion zone and had LA at 365 s/cm2. Six composite dust samples were collected in and around the planar shop and results showed LA at levels between 609 s/cm2 and 444,636 s/cm2. Subsurface confirmation soil samples were collected in the pole barn,

warehouse, scale house/lumber storage building, shed, east ball field, and BNSF spur extending just south of the planar shop. Results were all <1% LA.

Surface composite soil samples were also collected from previously remediated areas that were suspected to have been impacted by subsequent removal activities and results were either ND or <1% LA. Limited additional soil samples were collected from other areas to determine cleanup needs, and results were ND for surface samples and <1% LA for subsurface samples. EPA required that all impacted areas be covered with a 4-inch layer of crushed gravel. Restoration also included backfill with EPA-approved materials. Personal air monitoring data were also collected during this removal effort and are presented in the RI (EPA, 2009a).

Removal Event – October/November 2003

The Riverside Park removal called for excavation to a depth of 12 inches to 36 inches bgs, except on the riverbank and the embankment on the northeast side of City Service Road (6 inches bgs). Soil more than 12 inches bgs was removed if vermiculite was visible at the excavation floor and confirmation soil samples were collected. The area was restored by backfilling to grade using EPA-approved fill and by hydroseeding, as required. Orange fencing was placed at depth to indicate the presence of vermiculite should soil be disturbed in the future. Riprap previously placed by the City was removed, washed, and replaced and topsoil was placed in the interstitial spaces. Prior to removal work, the City obtained riprap to be installed in the river about three-quarters of the way from the new boat ramp to the existing boat ramp to slow the water velocity near the new boat ramp. The removal contractor placed this riprap in consultation with the City during restoration activities.

Excavation of the embankment on the southeast side of City Service Road has not yet been conducted.

Scope and Role of the OU1 Remedy

The OU1 remedial action will build on the numerous removal actions already implemented at the former Export Plant. As described above, numerous investigations and removal actions have already been completed at OU1. LA-contaminated soil remains both on the surface and at depth across many areas of the OU. The remedy focuses primarily on preventing direct exposure to remaining areas of contamination through containment and/or removal. The remedy also uses ICs both to protect the remedy and to prevent disturbance of the deeper residual LA contamination. This approach is protective of both human health and the environment.

Detailed Description of the Selected Remedy

The selected remedy provides protection of human health by addressing LA contamination in surface soil and in the subsurface utility corridors. The remedy also maintains and protects remedies put in place under past response actions. Details of the selected remedy are provided below. They may be modified while finalizing the remedial design and during the construction processes when required by site conditions.

When the site-wide risk assessment is complete, the agencies will re-evaluate the remedy in accordance with the review requirements at CERCLA Section 121(c). If unacceptable exposures are identified, EPA will take action as necessary to ensure that the soil-to-air pathway is broken. Actions may include additional excavation, covers, and/or strengthening ICs.

EPA will also work closely with the City of Libby during design so that the remedy can complement any planned future uses. EPA will also conduct a risk assessment at OU1, once toxicity factors are available, to confirm effectiveness of the remedy.

Containment and Removal

The majority of the remediation work at the OU will consist of containment via construction of soil covers over areas of surface contamination. The FS anticipated that approximately 9 acres of the site would be covered. Soil cover will be used because of ease of installation, availability of borrow soil resources, and affordability compared to other types of covers (e.g., geosynthetic or concrete/asphalt).

Following completion of excavation, samples would be collected at the final depth prior to the backfilling of the site. Any areas having contamination greater than 1% LA would be re-excavated in accordance with the Draft RAWP. Areas at depth having lesser levels of residual contamination would be documented on the final restoration plan.

All material removed from the site will be transported to the amphitheater staging area and ultimately to the Grace mine.

The cover thickness and materials used will be refined in the remedial design process. The cover will be seeded to minimize erosion. Areas where a soil cover is the chosen remedy will be delineated in the post-remedy map to denote areas where contamination is left in place. This, along with the investigation map from the Remedial Investigation, will be a useful tool used to locate contamination in future excavations into the sub-grade (i.e. utility trenches). Additionally, orange construction fence will be placed over areas of known contamination that will be covered by at least 18" of fill materials. This will provide a physical marker to denote areas of contamination during future excavations.

Note:

During investigation activities for Area 1, contamination was noted in some of the subsurface soils in areas where there was no surface contamination. This contamination extended to depths of four feet. It is assumed that this contamination will be left in place. These areas will have no physical marker to denote intrusion into contaminated subsurface soils. Documentation of this contamination can be found in the OU1 Remedial Investigation (RI).

Clean fill for excavations and construction of covers will be obtained from offsite subsoil and topsoil sources outside of the Libby valley (used for the ongoing Libby cleanup efforts). The FS estimated that approximately 22,600 loose cy of backfill and 14,550 loose cy of topsoil would be

required for excavations and covers. These quantities have been revised for each of the remedial options presented below.

Performance Standards

Cleanup criteria for levels of concern and the basis for those levels are typically included in a ROD. However, a site-wide risk assessment has not yet been completed. Although an OU-specific human health risk assessment was conducted for OU1, it did not include LA-specific toxicity values. In the absence of established quantitative, risk-based cleanup levels, EPA is removing and/or capping all visible vermiculite and any detectable LA thereby breaking complete exposure pathways and reducing future potential risk for LA exposure. Exceptions include those circumstances where vermiculite is otherwise well-contained. If LA source materials are encountered during excavation activities, removal will continue until the source material is removed (to a maximum of 3 feet). If high levels of contamination continue 3 feet below the anticipated final grade, a visible barrier marking the extent of excavation will be placed before backfilling. Once sufficient data are obtained to establish the LA-specific toxicity values, the site-wide risk assessment will be conducted.

Additional site specific ARAR of concern: Surface Water

The State of Montana has promulgated specific water quality standards applicable to the use designation of the Kootenai River. Montana's non-degradation standard applies. Stormwater discharge best management practices (BMPs) will be implemented during construction based on site-specific evaluation. The BMPs will allow the surface water ARARs to be met. This will require adherence to the substantive requirements of the general stormwater permits for certain activities and refer to the requirement of BMPs to minimize or prevent discharge that may adversely affect human health or the environment.

Controlling Documents

All work will be performed in accordance with work practices set forth in the OU4 Draft Removal Action Work Plan currently being implemented and finalized for Libby residential exterior removal activities. All safety requirements set forth in the Site Safety and Health Plan for the OU4 residential removals will also apply to work activities at OU1. Additional site specific work and/or safety requirements may be developed during the preparatory inspection and will be documented on an amended removal design

Temporary lay-down areas and gravel access roads will be constructed as necessary to limit disturbance of contaminated soil during removal activities. Site access will be controlled and limited to through traffic required for residences and/or businesses located west of the park. Traffic control will be presented in a separate plan and traffic will be controlled by flaggers at all times during excavation and backfilling activities performed by any EPA contractors. Public access to Riverside Park will not be allowed during remediation activities. Access to the boat ramp will not be allowed during periods of site work due to high truck traffic and other safety concerns.

IMPLEMENTATION OF THE OU1 REMEDIAL ACTION

Each area of OU1 requires some degree of remedial action with Area 1, the former Export Plant requiring the highest level of effort. The selected remedies for Area 2 and Area 3 are considered static and not proposed with multiple options. These remedies will be discussed first. Area 1 and its options will be discussed following the discussion of Areas 2 and 3.

Area 2- Riverside Park

Riverside Park requires modification to the existing boat ramps and to the shoreline rip rap. These actions will most likely take place as independent projects conducted in the 2011 field season. Additional rip rap will be obtained in accordance with the original design specifications for bank protection for this project. The rip rap will be placed as needed along the shoreline of Riverside Park in order to provide additional low river stage protection and to address bank erosion that is currently occurring. Placement will be in accordance with the original construction specifications for the existing shore protection or per new specifications developed by USACE if the previous specifications are not available. All appropriate permits for placement of fill type materials within the river will be obtained prior to the placement of additional rip rap.

The currently used boat ramp surface will be removed and replaced with articulated interlocking open block pavers. The paving system is anticipated to be installed via a design-build contract vehicle implemented by a contractor specialized in installation of such systems. The need to modify the non-used boat ramp remains to be determined.

Removal actions were performed on parts of Area 2 in 2003, as detailed above. These areas do not require additional remediation. Subsequent to the 2003 removal action, visible vermiculite was observed at the east end of Area 2, beyond the original boat ramp. This area was not removed in 2003, and will require removal under this remedial action. These areas will be excavated to a depth of 18 inches. The removed soils will be replaced with clean fill and the area will be seeded. Low levels of visible vermiculite were observed on a portion of the north side of the embankment to City Service Road adjacent the proposed excavation area. The removal of the vermiculite will be included in this remedial area.

During investigations subsequent to the 2003 removal low levels of visible vermiculite were noted in four areas within the area removed in 2003. If vermiculite is identified in these areas it will be removed by hand or machine methods as appropriate.

Area 3- Embankments

The embankments of the Highway 37 and City Service Road will be addressed during this remedial action. The coordinating agency for the element of work on Highway 37 embankment will be MDT. Work on the embankment of City Service Road will be coordinated with the City of Libby.

Remedial activities on the Highway 37 embankment will comprise a 4-6 inch scrape of the slope areas requiring remediation in order to remove all vegetation and to scarify the surface to minimize the establishment of a slip plane. Excavation of a full foot of contaminated soil on the embankment is not possible due to slope stability concerns raised by MDT. Isolated areas of contamination due to visible vermiculite will be identified in the field and removed as necessary.

Portions of Area 1 located at the base of the slope that have identified contamination (see attached figures) will be addressed along with the embankment remedial action. It is currently anticipated that the contaminated portions of Area 1 adjacent to the Highway 37 embankment will be excavated to a minimum depth of 12 inches and backfilled to the original grade. It is also possible that the area will be remediated to some extent near the slope by a cover only option if it is decided that laying back the Highway 37 slope is required to enhance slope stability and constructability of the remedy. It is likely that areas of Area 1 impacted by the toe-of-slope-advancement resulting from a slope lay back would not require excavation. This portion of Area 1 is being included in Area 3 since it is isolated from the majority of Area 1 by areas not needing remediation.

One foot of clean fill, comprising 9 inches of common fill and 3 inches of top soil, will be placed over the scraped areas of the embankments to form the protective cover. The lateral limits of the cover may need to expand beyond the limits of contamination in order to facilitate creation of a smooth slope transition into adjacent non-remediated areas. Excavated areas within the adjoining portions of Area 1 will be backfilled to the surrounding grade. The means of soil cover placement on the embankments comprising Area 3 will be determined at the preparatory meeting for this work effort and will depend on access limitations caused by the steep slopes. Compaction will be attained to current MDT specifications using either a stand-alone compactor or a compaction attachment on an excavator. Proctors and placement specifications will be prepared based on the borrow material utilized for cover material. Compaction of the backfill material placed in the Area 1 segments of work will be per performance specifications established for the OU4 residential restoration process which prevents soil pumping or rutting as well as helping to prevent over-compaction that may limit vegetation growth. Erosion mat will be installed on the slopes following the completion of restoration in order to mitigate the possibility of erosion.

The remedy of the City Service road embankment operates under the assumption that the City plans on removing the road. Therefore the contamination will be removed to 12 inches and the soils replaced with 9” of common fill soils and 3” of topsoil. It also assumes that the City desires the southward trending spur exiting from the City Service Road into the eastern portion of OU1 be removed. This spur is reported to have vermiculite contamination in the road section. This spur will be removed as part of the Area 3 activities with the initial target excavation depth to be current surrounding grade. Once the excavation of the main body of the road is complete visual inspection and confirmation sampling will be used to determine if there is a need to over-excavate the footprint of the spur by an additional 12 inches. If gross contamination is detected, the excavation will continue to a maximum depth of three feet below surrounding grade and a physical marker will be placed at the floor of the excavation prior to backfilling. The cut between City Service Road and the removed spur will be graded to match the rest of the slope

and a protective guard rail will be installed across the opening between the existing guardrail segments at that location to provide protection for motorists.

Area 1- Former Export Plant

The Former Export plant portion of OU1 comprises the majority of the site. Within this area there have been observations of visible vermiculite and detections of LA as determined by analytical methods. As indicated above, the Record of Decision allows for excavation and replacement of contaminated soil, capping of contamination or a combination of both remedial approaches. The pre-existing drainage problems in this area may or may not be alleviated during the remedial action. Alleviation of these pre-existing problems is not the responsibility of the EPA under the Superfund process.

Three issues in Area 1 will be addressed regardless of which of the remedy options for Area 1 is chosen for the remedial design.

1. The areas where high levels of vermiculite were observed during the investigation will be excavated to a depth where the high levels of vermiculite are removed or three feet of cover material will be placed over the remaining contamination.
2. The area adjacent to City Service Road where analytical results show detectable levels of LA will be removed to a depth of 18" below the elevation of City Service Road. This excavation will extend a minimum of ten feet south of City Service Road. Excavation will commence parallel to the City Service Road and proceed with decreasing depth towards the south away from the road. Immediately adjacent to the road excavation will be to a depth of 18 inches to accommodate placement of fill and top soil. The excavation will transition in 6 inch increments to the south to allow for the limitations of soil removal using an excavator. One removal band will therefore be 18 inches, adjacent to that will be a 12 inch removal, adjacent to that will be a 6 inch removal and that will transition into a fill only area that will carry the rest of the way across the site at constant grade. The width of each band will be determined by current topography. Once all areas of the site to be addressed under this remedial action can accommodate the full 18 inches of fill, 12 inches of common fill would be placed over the site to provide a clean working surface for the city contractor. Clean soil for covers and for backfilling excavated areas (areas needed to be excavated to maintain grades and utility corridors) will be brought from an offsite borrow source area outside of the Libby valley and analyzed for asbestos and other contaminants before use during construction.
3. The area surrounding the search and rescue building will be excavated to a depth of 18" and restored with clean material. The elevation of the final grade around this building cannot be increased without negatively affecting the drainage.

Any cut material taken from a documented clean zone will be utilized on site to facilitate leveling the cover sub-grade. Any soil having low levels of contamination cut from high spots within an area to be covered only may be graded to adjacent low areas in order to provide a more uniform sub-grade as long as the work can be done without generating any visible dust.

The two options evaluated below are derived from the ROD and the FS for the site and address 1) a predominantly excavation-based approach where the site is then backfilled to current drainage and topographic conditions, and 2) an option to fill only over areas of known contamination.

Remedial Action Option 1 – Excavation and Backfill

The fundamental objective of Option 1 is to remove, as necessary, and backfill any contaminated areas across the site to ensure no residual contamination or 12 inches of cover plus 6 inches of topsoil over contamination left in place. Most of the removal areas will require only 12 inches of excavation to remove contamination though some of the site has been called out for the potential to require additional excavation to remove all contamination. Removal of any identified gross contamination would take place to a maximum depth of 3 ft at which time an indentifying barrier layer would be installed in that area and the site backfilled in accordance with procedures set forth in the Draft RAWP 2010.

A removal plan has been developed that shows areas to be removed. This plan also shows several areas that currently do not have documented contamination and areas where prior removals have taken place. It is possible that the excavations may expand into the areas with no previously identified contamination as work progresses due to the identification of additional contamination during remedial activities. Subsequent to the investigation of Area 1, surface contamination has been detected in the "clean area" on the west side of the site constrained by Highway 37, the City Service Road and the spur off of that road. This contamination may have derived from surface runoff from the adjacent road side slopes, in which case the area will require only a surface scrape, or it may represent previously unnoted contamination which could trigger full removal activities in that area.

This option calls for completing the excavation and placement of the 12 inches of common fill that would leave the site with a grade and topography similar to existing conditions.

The total volume of excavation is 6,166 cubic yards (cy).

The total volume of common fill is 4,522 cubic yards (cy).

The total volume of top soil is 2,261 cubic yards (cy).

Remedial Action Option 2 – Cover over Contaminated Areas Only

The fundamental objective of Option 2 is to raise the grade over the areas of known contamination to achieve 12 inches of cover plus 6 inches of topsoil while minimizing the need for excavation. This option will leave Area 1 in a hummocky condition after the remedy is applied due to fill material being placed only in areas of known contamination.

The total volume of excavation is 0 cubic yards (cy).

The total volume of common fill is 4,682 cubic yards (cy).

The total volume of top soil is 2,341 cubic yards (cy).

Note:

A conceptual grading plan was generated to determine the necessary volume of fill material that would create sheet drainage toward the northeast corner of the site. The City may find the data useful in determining the level of effort and cost to grade the site so that it drains properly. Costs to fill and restore the intervening areas between remediated areas would be the responsibility of the City of Libby. This data is available to the City upon request.

Considerations for Both Options

The City of Libby will be responsible for determining final park grade and for establishing that grade during park construction. Credit could be provided by EPA in an escrow account to the City of Libby to cover the cost of procuring and placing the 6 inches of top soil and for hydroseeding the affected remedial areas of Area 1, with costs determined by the joint government/removal contractor estimate for that work item (see Attachment 1 for an estimate showing labor hours, materials, equipment hours, and lump sum costs for each work item).

The EPA may provide additional escrow funds for top soil to be utilized for the creation of planting berms. The cost of these berms is not addressed in the project cost estimate since their location and size are not known and will be a function of discussions between the city and the EPA. Clean soil for backfilling excavated areas (including utility corridors) will be brought from an offsite borrow source area outside of the Libby valley and analyzed for asbestos and other contaminants before use during construction.

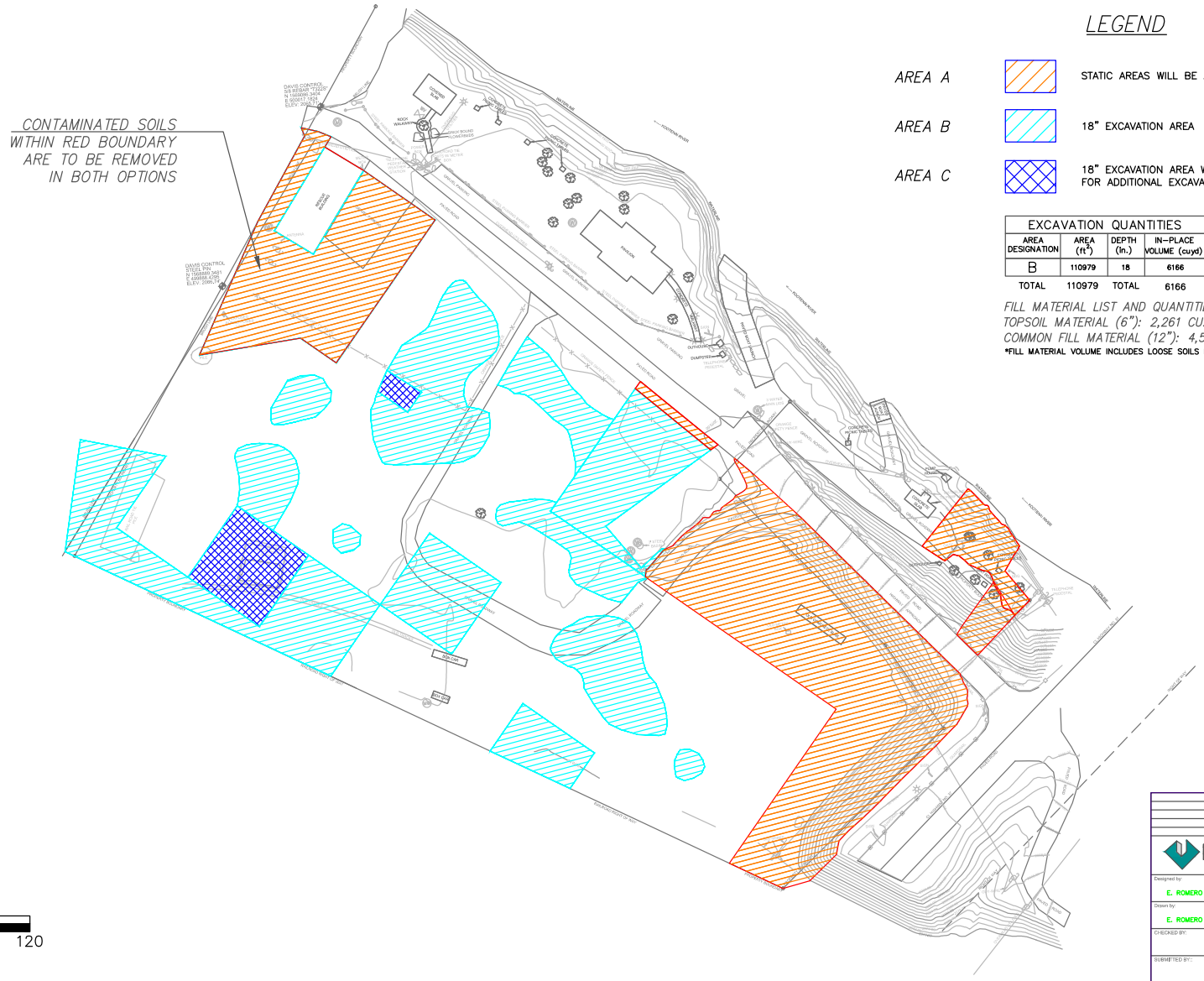
Follow-on work to support the city installation of additional utilities through the site will be required once park construction commences. Where possible, clean cover soil will be salvaged, though some percentage of the placed fill will be removed along with underlying contaminated soil during utility installation. Utility trenches will be excavated to required depths within corridors laid out by the city. If contamination is noted in the sidewalls they will be draped in plastic to facilitate installation of the utilities. Fill would be placed in the bottom of the trenches if contamination was detected there. If no contamination is noted in the trench the city utility contractor will be provided with an open trench. The utility contractor will be responsible for all utility installation and backfill. The excavation option minimizes the need for, or extent of, this follow-on support phase by removing the majority of contamination from the site prior to placement of clean material over the site.

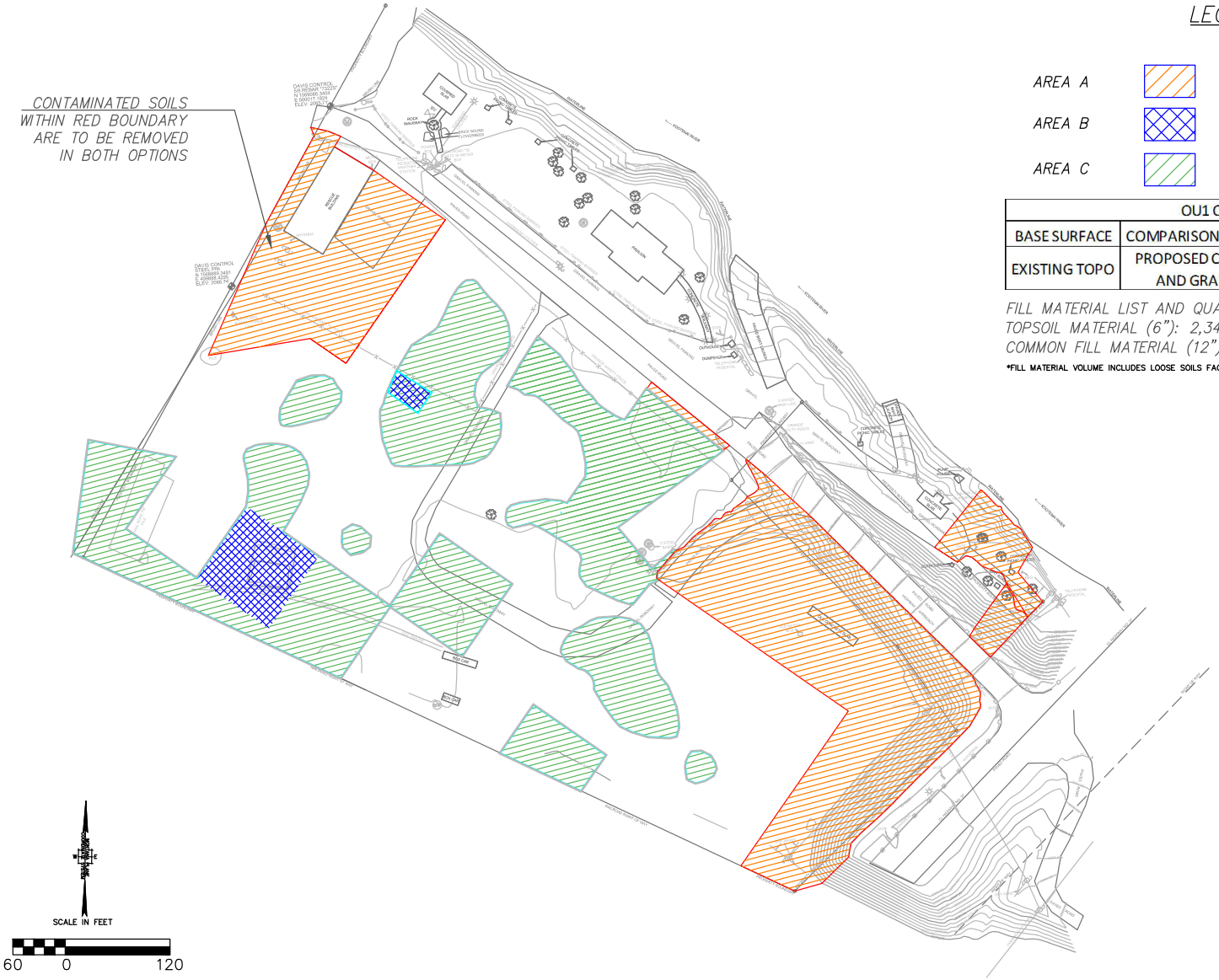
Both options assume that the City may move City Service Road and propose nothing that would adversely impact that work. Since the grade would need to be substantially filled to accommodate relocation of the access ramp, excavation and backfill or placement of 18 inches of fill over contaminated areas will not impact future park work. Also, since a clean working

surface will be provided, and follow up utility installation support is planned, both options comply with the need to facilitate future park construction.

Attachments

Drawing – OU1, Area 1 – Option 1, Excavation and Fill
Drawing – OU1, Area 1 – Option 2, Capping Only


CONTAMINATED SOILS WITHIN RED BOUNDARY ARE TO BE REMOVED IN BOTH OPTIONS
LEGEND
AREA A
STATIC AREAS WILL BE ADDRESSED IN BOTH OPTIONS
AREA B
18" EXCAVATION AREA
AREA C
18" EXCAVATION AREA WITH GREATEST POTENTIAL FOR ADDITIONAL EXCAVATION (STATIC)
EXCAVATION QUANTITIES
AREA DESIGNATION | AREA (ft²) | DEPTH (in.) | IN-PLACE VOLUME (cuyd)
B | 110979 | 18 | 6166
TOTAL 110979 TOTAL 6166
FILL MATERIAL LIST AND QUANTITIES:
TOPSOIL MATERIAL (6"): 2,261 CU. YDS.
COMMON FILL MATERIAL (12"): 4,522 CU. YDS.
*FILL MATERIAL VOLUME INCLUDES LOOSE SOILS FACTOR (1.1)
SCALE IN FEET
60 0 120
PRI
US ARMY CORPS OF ENGINEERS OMAHA DISTRICT RAPID RESPONSE PROGRAM
Designed by: E. ROMERO
Drawn by: E. ROMERO
CHECKED BY:
SUBMITTED BY:
US EPA Region VIII Denver, Colorado
LIBBY ASBESTOS SITE
LIBBY, MONTANA
OU 1
AREA 1-OPTION 1
EXCAVATION AND FILL
SCALE: AS NOTED
DATE: 09/14/10
DWG:
Sheet number: - -
PLOT SCALE: 1 : 1
DESIGN FILE:
FILE:



LEGEND

AREA A		STATIC AREAS WILL BE ADDRESSED IN BOTH OPTIONS
AREA B		18" EXCAVATION AREA WITH GREATEST POTENTIAL FOR ADDITIONAL EXCAVATION (STATIC)
AREA C		AREAS OF CONTAMINATED SOILS TO BE CAPPED

OU1 OPTION 2 FILL VOLUMES				
BASE SURFACE	COMPARISON SURFACE	CUT (YDS^3)	FILL (YDS^3)	NET VOLUMES
EXISTING TOPO	PROPOSED CAPPING AND GRADING	0.00	7022.81	7022.81

FILL MATERIAL LIST AND QUANTITIES*:
TOPSOIL MATERIAL (6"): 2,341 CU. YDS.
COMMON FILL MATERIAL (12"): 4,682 CU. YDS.

*FILL MATERIAL VOLUME INCLUDES LOOSE SOILS FACTOR (1.1)

PRI

US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
RAPID RESPONSE PROGRAM

Designed by: E. ROMERO
Drawn by: E. ROMERO
CHECKED BY:
SUBMITTED BY::

US EPA Region VIII Denver, Colorado

LIBBY ASBESTOS SITE
LIBBY, MONTANA

OU1
AREA 1 – OPTION 2
CAPPING ONLY

SCALE: AS NOTED
DATE: 09/14/10
DWG:
Sheet number: – –
PLOT SCALE: 1 : 1
DESIGN FILE:
FILE: